

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 02 AUG 2005

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Applicant's or agent's file reference BP107793	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/FI2004/000010	International filing date (day/month/year) 09.01.2004	Priority date (day/month/year) 10.01.2003	
International Patent Classification (IPC) or national classification and IPC D21C9/16			
Applicant KEMIRA OYJ et al.			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

- sent to the applicant and to the International Bureau a total of 2 sheets, as follows:
  - sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
  - sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
- (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

Date of submission of the demand 03.11.2004	Date of completion of this report 01.08.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Naeslund, P Telephone No. +49 89 2399-8614



# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/FI2004/000010

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

### Description, Pages

1-17 as originally filed

### Claims, Numbers

1-11 received on 03.11.2004 with letter of 03.11.2004

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/FI2004/000010

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	NONE
Inventive step (IS)	Yes:	Claims	NONE
	No:	Claims	1-11
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	NONE

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/FI2004/000010

**Re Item V**

***Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement.***

D1: EP-A2-0 814 193 cited in the application and in the category X in the ISR

1. The claimed invention relates to a process for bleaching a cellulosic fibre material with a peroxide compound in an aqueous alkaline medium, comprising a bleaching step wherein a polymer solution containing a first polymer comprising a homopolymer of acrylic acid, methacrylic acid or maleic acid, or a copolymer of acrylic acid and/or methacrylic acid with an unsaturated dicarboxylic acid, and a second polymer comprising a poly-*alfa*-hydroxyacrylic acid or a salt thereof, said polymer solution having a pH of at most 7, is added to a cellulosic fibre material, and thereafter adding a peroxide compound and an alkaline substance and carrying out the bleaching.

The closest prior art, document D1 (see in particular page 3, line 37-page 4, line 11; page 5, line 5-line 32; page 7, line 3-line 20; claim 7) discloses a process for the bleaching of a fibre material with a peroxide compound. A stabilizing agent, comprising a polymer of *alfa*-hydroxyacrylic acid and homopolymers and copolymers of acrylic acid, methacrylic acid and maleic acid, is used in this process. The process can be carried out so that the fibre material is pretreated with the stabilizing agent and thereafter is bleached with an aqueous solution of a peroxide compound.

The process defined in present claim 1 is not considered to differ from the process of D1 in more than that the polymer **solution has a pH of at most 7** (note, however, that a part of the range required by present claim 1 could be seen as implicitly anticipated, as follows from below). Whilst it might be correct that when the two polymers of D1, i.e. components (A) and (B) are mixed as alkali salts, the solution thereof has an alkaline pH value, it must, however, be taken into consideration that adjustments in this respect pertain to the daily tasks of the skilled man in the field. Moreover, a hint at lower pH values such as those falling within the broad range of present claim 1 is also given in D1; see page 6, lines 44-46 where the pH value of the aqueous solution of the stabilizing agent is stated to more preferably lie between 6 to 8.

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/FI2004/000010

Thus, the subject-matter of claim 1 does - at least-not fulfil the requirements of Art. 33(3) PCT.

2. The subject-matter of claim 2 states that the process is carried out in the absence of a nitrogen-containing chelating agent. Whilst this feature would -formally-distinguish the subject-matter-in- suit from the process of **D1** (the stabilising agent in **D1** comprises a nitrogen-containing chelating agent) no inventive merit can be accorded thereto; it must be considered that the skilled man faced with unwanted nitrogen emissions to the air and to aquatic systems is fully capable of solving this problem in a straight forward way simply by leaving out the compound giving raise to the problem; the skilled man does not, for obvious reasons, add more chemicals than necessary; Art. 33(3) PCT.
3. The process of claim 3 does not add differing (inventive) features in view of the process according to **D1**; it is only optional according to **D1** to add magnesium ions to the process; Art. 33(3) PCT.
4. The features according to claim 4 results from an routine optimization (at the most); Art. 33(3) PCT. See also above under point 1.
5. The features recited in claims 5 to 11 relating to the polymers used, their molecular weights and the amounts of polymers added are disclosed in **D1**, see page 5, lines 5-32 and page 7, lines 8-20. Therefore these features do not add any inventive matter either; Art. 33(3) PCT.
6. The different pulps to be bleached, defined in claim 11, are known from **D1**, see page 7, lines 3-5; Art. 33(3) PCT.
7. For the assessment of the present claims on the question whether they are industrially applicable, no particular reasoning would appear necessary to give. The industrial application would appear to be evident (Art. 33(4) PCT).

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/FI2004/000010

**CLAIMS**

1. A process for bleaching a cellulosic fibre material with a peroxide compound in an aqueous alkaline medium, comprising a bleaching step wherein
  - a) a polymer solution containing a first polymer (A) comprising a homopolymer of acrylic acid, methacrylic acid or maleic acid, or a copolymer of acrylic acid and/or methacrylic acid with an unsaturated dicarboxylic acid, and a second polymer (B) comprising a poly-alfa-hydroxyacrylic acid or a salt thereof, said polymer solution having a pH of at most 7, is added to a cellulosic fibre material, and
  - b) thereafter adding a peroxide compound and an alkaline substance and carrying out the bleaching.
2. The process of claim 1 wherein the bleaching is carried out in the absence of a nitrogen-containing chelating agent.
3. The process of claim 1 or 2 wherein the bleaching is carried out in the absence of added calcium and/or magnesium ions.
4. The process of any of claims 1 to 3 wherein the polymer solution has a pH of at most 6, and preferably at most 5.
5. The process of any of claims 1 to 4 wherein the first polymer (A) comprises a raw polymer obtained from the homopolymerization of acrylic acid, methacrylic acid or maleic acid or from the copolymerization of acrylic acid and/or methacrylic acid with an unsaturated dicarboxylic acid, said raw polymer having a pH of below 7, preferably below 6, and more preferably below 5.
6. The process of any of claims 1 to 5 wherein the first polymer (A) has a molecular weight of at least 4000, preferably at least 10000, and more preferably at least 30000.
7. The process of any of claims 1 to 6 wherein the second polymer (B) has a molecular weight of at least 5000, preferably at least 10000, and more preferably at least 15000.
8. The process of any of claims 1 to 7 wherein the first polymer (A) comprises a copolymer of acrylic acid and/or methacrylic acid with maleic acid, wherein the

molar ratio of acrylic acid and/or methacrylic acid to maleic acid is from 80:20 to 20:80, preferably from 70:30 to 50:50.

9. The process of any of claims 1 to 8 wherein the share of the second polymer (B) is from 1 to 50% by weight of the total amount of the first and second polymers (A) and (B).
10. The process of any of claims 1 to 9 wherein the polymers (A) and (B) as active material are added in a total amount of 0.05 to 10 kg per ton of dry cellulosic fibre material, preferably in an amount of 0.1 to 5 kg per ton of dry cellulosic fibre material.
- 10 11. The process of any of claims 1 to 10 wherein the cellulosic fibre material comprises a chemical, mechanical, chemi-mechanical or deinked pulp.